# ADDITIONAL RECORDS OF MUTILLID WASPS FROM THE NEVADA TEST SITE[1]

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From 1960 to 1964, more than 800 mutillids, mostly females, were collected in can pit traps during ecological studies by Brigham Young University at the Nevada Test Site (Allred, Beck, and Jorgensen, 1963). These were submitted to Dr. William E. Ferguson, San Jose State College, for study. I am indebted to him for making the identification of those specimens whose records are contained herein.

Inasmuch as the females of these insects have largely been unstudied and most species of mutillids have been described from the males, Ferguson spent part of the summer of 1964 at the test site in order to correlate the sexes of some species through specialized collecting. Specimens taken by him were principally males collected with light traps during August. In 1967 he published records of 31 species of mutillids of the test site, which included descriptions of 4 new to science, 2 new combinations, and 25 synonymies. Most of his published records were of males.

The records included here deal with females as well as some males which supplement those listed by Ferguson (1967). Inasmuch as the females are wingless and likely do not move for great distances, their occurrence in pit traps may be closely correlated with habitat and vegetation, whereas the males may fly for some distance before capture in light traps, and such correlation for them may be questionable. Notations of such habitat occurrence of these insects are included under the species listings.

The Nevada Test Site is situated approximately 70 miles northwest of Las Vegas in the southeastern part of Nye County, Nevada. It is typified by the Upper and Lower Sonoran life zones, representative of the cool and hot deserts of North America. The northern part of the test site occurs in the Great Basin, whereas the southern part is in the Mojave Desert.

In their description of the biotic communities of the Nevada Test Site, Allred, Beck, and Jorgensen (1963) delineated six major plant communities and assigned other less distinct areas to a "mixed" designation. The *Larrea divaricata-Franseria dumosa* community was designated as belonging to the Mojave Desert. Besides the predominant species for which the community was named, plants of 37 other species are common therein. The *Grayia spinosa-Lycium andersonii* and *Coleogyne ramosissima* plant communities, also of the Mojave Desert, each have 26 known species of common plants in their composition. *Atriplex confertifolia* and *Kochia americana* are the predominant plants in a community wherein only three other

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species are considered as common associates. The *Salsola kali* community is typical of disturbed areas and has as many as nine other species of common plant associates. The Pinyon-Juniper (*Pinus monophylla* and *Juniperus osteosperma*) community is characteristic of the mesas and higher foothill areas, particularly of the Great Basin region. Plants of fifteen other species are commonly associated with these Desert Woodland trees.

## Additional Records

*Acanthophotopsis falciformis falciformis* Schuster. Ferguson (1967) listed records for six males collected in a light trap in August, and one in a pit trap in June. Additional record: Area 5—*Larrea divaricata-Franseria dumosa*, July, pit trap. Comment: Ferguson's (1967) records of this species were taken in the Mixed and *Larrea-Franseria* communities.

*Acrophotopsis eurygnathus* Schuster. Ferguson (1967) reported 19 males from the test site. Additional records: Area 5—*Lycium pallidum*, 4♂ July; 3♂ 2♀ June; *Larrea divaricata-Franseria dumost*, 1 ♂ 2 ♀ July, pit trap. Comments: Ferguson (1967) indicated the *Larrea-Franseria* community as the source of his specimens. His records also include the Mixed vegetative type. The *Lycium pallidum* is an additional habitat type for this species.

*Chyphotes melaniceps* Blake. This species has not been previously reported from the Nevada Test Site. Records (all males): Area 1—*Salsola kali*, 1 in June, pit trap; *Grayia spinosa-Lycium andersonii*, 1 in May, 1 in June, 2 in Aug., 2 in Sep., 2 in Oct., pit trap. Area 4—*Grayia spinosa-Lycium andersonii*, 1 in Aug., aerial net. Area 5—*Larrea divaricata-Franseria dumosa*, 6 in July, 1 in Sep., 1 in Oct., pit trap; *Lycium pallidum*, 2 in July, 7 in Aug., pit trap; 12 in July, incandescent-light trap. Area 6—*Atriplex confertifolia-Kochia americana*, 1 in Aug., pit trap; *Yucca brevifolia-Coleogyne ramosissima*, 9 in Aug., aerial net. Area C—Mixed vegetation, 1 in Aug., 2 in Sep., pit trap and aerial net, respectively. Area J—Mixed vegetation, 1 in Sep., pit trap. Comments: A variety of ecological types are occupied by this species. On the basis of seasonal occurrence, the *Grayia-Lycium* is the most commonly represented. However, greatest numbers were found in the *Lycium pallidum* areas.

*Chyphotes petiolatus* Fox. This species was not reported from the test site by Ferguson (1967). Records: (all males): Area 1—*Grayia spinosa-Lycium andersonii*, 5 in May, 6 in June, 3 in July, 1 in Aug., 2 in Sep., pit trap; 1 in Mar., aerial net; *Salsola kali*, 1 in May, pit trap. Area 5—*Larrea divaricata-Franseria dumosa*, 1 in Apr., 5 in June, 2 in July, 2 in Aug., pit trap; *Lycium pallidum*, 1 in Apr., 5 in May, 4 in June, 4 in July, 4 in Aug., 2 in Sep., pit trap. Area 10—*Coleogyne ramosissima*, 2 in June, pit trap. Area CB—Mixed vegetation, 1 in Sep., pit trap. Comments: This species occupies a variety of habitats. Seasonally and in abundance it is most common in the *Lycium pallidum* and *Grayia-Lycium* communities.

*Dasymutilla gloriosa* (Saussure). Ferguson (1967) reported three females taken from the test site. ADDITIONAL RECORDS: Area 1—*Salsola kali*, ♀, June, pit trap. Area 4—*Grayia spinosa-Lycium andersonii*, ♀, Sep., aerial net. Area 400—Mixed vegetation, ♀, July, by hand. Area C—Mixed vegetation, ♀, July, pit trap.

*Dasymutilla klugii* (Gray). Ferguson (1967) did not report this species from the test site. RECORD: Area 5—*Larrea divaricata-Franseria dumosa*, ♂, July, aerial net.

*Dasymutilla satanas* Mickel. Ferguson (1967) reported 24 females from the test site. ADDITIONAL RECORDS: Area 4—*Grayia spinosa-Lycium andersonii*, 2 ♀ July, ♀ Aug., 2 ♀ Sep., pit trap; ♀ Aug., aerial net. Area 5—*Larrea divaricata-Franseria dumosa*, ♂ 3 ♀ July; *Lycium pallidum*, 4 ♀ July, 3 ♀ Aug., ♀ Sep., pit trap. Area 10—*Coleogyne ramosissima*, ♀ Aug.; *Salsola kali*, ♀ Aug., pit trap. Area C—Mixed vegetation, ♀ June, pit trap. COMMENTS: Ferguson's (1967) records were related to Mixed and *Larrea-Franseria* communities. Additional records show a variety of habitats for this species. Seasonally and in numbers it is apparently most common in the *Lycium pallidum* and *Grayia-Lycium* communities.

*Odontophotopsis mamata* Schuster. Ferguson (1967) reported 100 specimens from the test site. ADDITIONAL RECORDS (all males): Area 1—*Grayia spinosa-Lycium andersonii*, 1 in July, 2 in Aug., pit trap. Area 5—*Lycium pallidum*, 1 in June, 1 in July, 21 in Aug., 1 in Sep., pit trap; 4 in July, incandescent-light trap; *Larrea divaricata-Franseria dumosa*, 3 in July, 3 in Aug., pit trap. Area 6—*Yucca brevifolia-Coleogyne ramosissima*, 12 in Aug., aerial net. Area C—Mixed vegetation, 1 in Aug., aerial net. Area J—Mixed vegetation, 1 in Aug., pit trap. COMMENTS: This species occurs in a variety of habitats but is probably most common in the *Lycium pallidum* community. Ferguson's (1967) records were from only the Mixed community type.

*Odontophotopsis setifera* Schuster. Ferguson (1967) indicated one specimen from the test site. ADDITIONAL RECORD: Area 5—*Lycium pallidum*, ♂ July, incandescent-light trap.

*Sphaeropthalma angulifera* Schuster. Ferguson (1967) reported seven specimens from the test site. ADDITIONAL RECORDS: Area 1—*Grayia spinosa-Lycium andersonii*, 2 ♂ June, ♂ July, ♂ Sept.; *Salsola kali*, ♂ June, pit trap. Area 5—*Larrea divaricata-Franseria dumosa*, 2 ♀ May, 3 ♀ June, 3 ♀ July, pit trap. Area J—Mixed vegetation, ♀ June, pit trap. COMMENTS: Ferguson's (1967) records were taken in Mixed vegetation and *Coleogyne* communities. He indicated that this species does not occur at lower elevations. However, additional records show it to occur in several habitats, primarily in the *Larrea-Franseria* and *Grayia-Lycium* communities.

*Sphaeropthalma blakeii* (Fox). Ferguson (1967) listed three specimens from the test site. ADDITIONAL RECORDS (both males): 1 in June, 1 in Oct., pit trap.

*Sphaeropthalma sonora* Schuster. Ferguson (1967) recorded 90 specimens from the test site. ADDITIONAL RECORDS (all males): Area

1—*Grayia spinosa-Lycium andersonii*, 1 in June, 1 in July, 1 in Aug., pit trap. Area 5—*Larrea divaricata-Franseria dumosa*, 12 in July, 4 in Aug., pit trap; 6 in Aug., aerial net; *Lycium pallidum*, 2 in July, 6 in Aug., pit trap; 15 in July, incandescent-light trap; 18 in June, 2 in July, black-light trap. Area 6—*Yucca brevifolia-Coleogyne ramosissima*, 1 in Aug., aerial net. Area 10—*Grayia spinosa-Lycium andersonii*, 3 in July, pit trap. Area CB—Mixed vegetation, 1 in Sep., aerial net. COMMENTS: Ferguson (1967) indicated that this species is common at lower elevations below the Pinyon-Juniper and *Coleogyne* communities. Additional records show it to be most common seasonally and in numbers in the *Lycium pallidum* and *Larrea-Franseria* communities.

*Sphaeropthalma unicolor* (Cresson). Ferguson (1967) listed 76 females and 53 males from the test site. ADDITIONAL RECORDS: Area 1—*Grayia spinosa-Lycium andersonii*, 10 ♀ Apr., 23 ♀ May, 12 ♀ June, 11 ♀ July, ♂ 5 ♀ Aug., ♂ 4 ♀ Sep., 3 ♀ Oct., ♀ Nov., pit trap; ♀ May, aerial net; *Salsola kali*, 2 ♀ June, pit trap. Area 4—*Grayia spinosa-Lycium andersonii*, ♂ Aug., aerial net. Area 5—*Larrea divaricata-Franseria dumosa*, ♀ June, ♀ Aug., pit trap. Area 10—*Coleogyne ramosissima*, ♂ July, pit trap. Area J—Mixed vegetation, 2 ♀ Apr., 2 ♀ May, ♂ 3 ♀ Aug., pit trap. COMMENTS: This species was taken by Ferguson (1967) in essentially all communities from the valley floors to the tops of the mesas. Additional records show it to be most common seasonally and in numbers in the *Grayia-Lycium* community.

## SUMMARY

Ferguson (1967) listed 31 species of mutillids from the Nevada Test Site. Three additional records are herein recorded—*Chyphotes melaniceps*, *C. petiolatus*, and *Dasymutilla klugii*.

On the basis of numbers collected, the following species are considered as rare at the test site (fewer than 10 specimens collected, as indicated by the numbers in parentheses):

| | | | |
|---|---|---|---|
| *Dasymutilla klugii* | (1) | *Dasymutilla gloriosa* | (4) |
| *Dasymutilla paenulata* | (1) | *Dilophotopsis concolor* | (4) |
| *Sphaeropthalma helicaon* | (1) | *Sphaeropthalma blakeii* | (5) |
| *Odontophotopsis setifera* | (2) | *Sphaeropthalma ferruginea* | (6) |
| *Sphaeropthalma macswaini* | (3) | *Sphaeropthalma pallida* | (7) |
| *Sphaeropthalma parapenalis* | (3) | *Acanthophotopsis falciformis* | (8) |

Considered as relatively abundant at the test site (over 100 specimens collected, as indicated by the numbers in parentheses) are the following species:

| | | | |
|---|---|---|---|
| *Sphaeropthalma unicolor* | (216) | *Sphaeropthalma sonora* | (164) |

Mutillids of the species *Chyphotes melaniceps* were the most widespread ecologically, whereas those belonging to *Sphaeropthalma unicolor* were the most widespread seasonally (Table 1). The greatest varieties of species were found in the Mixed, *Larrea-Franseria*, and *Grayia-Lycium* communities, in that order, and the fewest in

the *Atriplex-Kochia* (Table 2). The greatest number of species was taken during July, and the fewest in March and November; none were found from December through February (Table 3). Greatest

TABLE 1. Summary of ecological and seasonal distribution of some mutillids at the Nevada Test Site.

| Species | No. communities in which found | No. months collected |
|---|---|---|
| *Chyphotes melaniceps* | 8 | 6 |
| *Chyphotes petiolatus* | 6 | 7 |
| *Dasymutilla satanas* | 6 | 4 |
| *Odontophotopsis mamata* | 6 | 4 |
| *Sphaeropthalma sonora* | 5 | 4 |
| *Sphaeropthalma unicolor* | 5 | 9 |
| *Sphaeropthalma angulifera* | 4 | 4 |
| *Dasymutilla gloriosa* | 3 | 3 |
| *Acrophotopsis eurygnathus* | 2 | 2 |
| *Acanthophotopsis falciformis* | 1 | 1 |
| *Dasymutilla klugii* | 1 | 1 |
| *Odontophotopsis setifera* | 1 | 1 |
| *Sphaeropthalma blakeii* | 1 | 1 |

TABLE 2. Number of species and relative abundance of individual mutillids in seven vegetative types at the Nevada Test Site.

| Vegetative type | Number of species | Individual abundance factor* |
|---|---|---|
| Mixed | 26 | 1.6 |
| *Larrea divaricata-Franseria dumosa* | 20 | 11.8 |
| *Grayia spinosa-Lycium andersonii* | 14 | 6.5 |
| *Lycium pallidum* | 10 | 19.3 |
| *Coleogyne ramosissima* | 9 | 2.4 |
| *Salsola kali* | 6 | 1.0 |
| *Atriplex confertifolia-Kochia americana* | 3 | 1.4 |

*Compared to 1 as representative of the fewest collected: adjusted to number of trap nights and collection attempts.

TABLE 3. Number of species and abundance of individuals collected during months of mutillid activity at the Nevada Test Site.

| Month | Number species | Abundance[1] | |
|---|---|---|---|
| | | Actual numbers | Ratio factor[2] |
| March | 2 | 2 | 1.0 |
| April | 3 | 17 | 5.7 |
| May | 6 | 46 | 7.7 |
| June | 14 | 96 | 6.9 |
| July | 18 | 196 | 10.9 |
| August | 14 | 145 | 10.4 |
| September | 12 | 53 | 4.4 |
| October | 6 | 21 | 3.5 |
| November | 2 | 2 | 1.0 |

[1]Based on equal collecting efforts for each month over a three-year period, 1959-1962.
[2]The number of individuals divided by the number of species. The higher the factor, the greater the relative abundance.

numbers of individuals were taken in July, although in consideration of the number of species represented, populations were not significantly different between July and August (Table 3). On this latter basis, a decline in the expected increase in relative populations in relationship to numbers of species was noted for June (Figure 1).

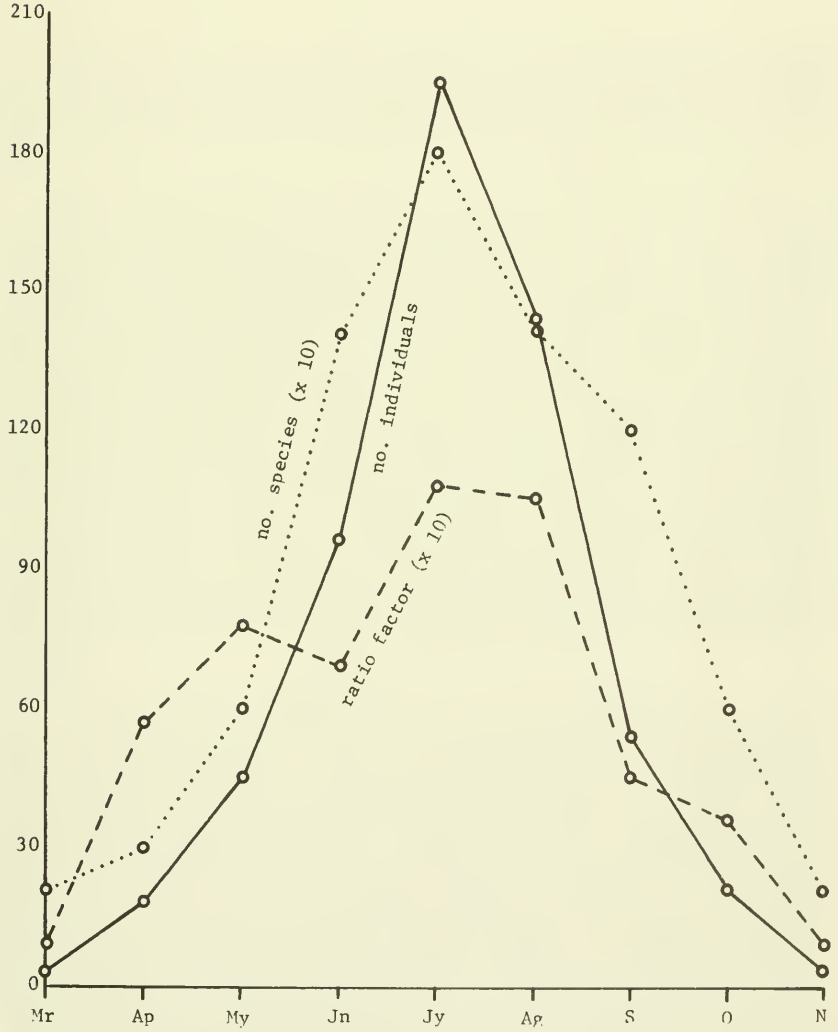


Fig. 1. Seasonal trend of numbers of individual mutillids, numbers of species represented, and the ratio factor (number of individuals divided by number of species represented). The number of species and ratio factor were multiplied by 10 to correlate more closely in degree for comparison with population number trends.

## References

Ferguson, W. E. 1967. Male Sphaeropthalmine wasps of the Nevada Test Site. Brigham Young Univ. Sci. Bull., Biol. Ser. 8(4):1-26.

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